

Workshop 6.7

Relevant activities for risk management of endocrine disruptors in Japanese government agencies*

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Abstract: Similar to other countries, issues concerning endocrine disruptors have been attracting people's attention, as well as concerns, in Japan. Consequently, relevant ministries have been conducting several activities and projects. A summary of the current activities related to endocrine disruptors being conducted by Japanese government agencies is provided in this paper.

INTRODUCTION

There are six ministries in Japan that are conducting or coordinating activities and projects related to endocrine disruptors. Each ministry deals with the issues in the same field from different viewpoints. For example, the Ministry of Economy, Trade, and Industry (METI) deals with the issue mainly from the viewpoint of facilitating industrial activities, while the Ministry of Health, Labor, and Welfare (MHLW) works to promote human health as well as safety of workers. The Ministry of Environment (MoE) works to protect the environment, and the Ministry of Land, Infrastructure, and Transport (MLIT) works to preserve the aquatic environment such as rivers, sewage, water systems, marinas, and the sea. The Ministry of Agriculture, Forestry, and Fisheries (MAFF) works to maintain the safety and quality of food, and the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) promotes basic studies and research on endocrine disruptors.

INTERMINISTRY COLLABORATION BODY

To achieve the maximum use of limited resources among Japanese government agencies and to conduct activities efficiently, a collaboration body called Interministry Meeting for Collaboration on Endocrine Disruptors was established in 1998. The meetings, held at least twice a year or whenever considered necessary, include information exchanges and discussions about taking comprehensive measures for endocrine disruptors.

By combining several activities of different ministries, the comprehensive measures can be materialized. The following are objectives of these comprehensive measures:

- prevent possible effects on human health and/or environmental system;
- control emissions to environment;

*Report from a SCOPE/IUPAC project: Implication of Endocrine Active Substances for Human and Wildlife (J. Miyamoto and J. Burger, editors). Other reports are published in this issue, *Pure Appl. Chem.* **75**, 1617–2615 (2003).

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- promote safety of products such as household goods, foods, packaging, and pesticides, as well as safety of workplaces;
- provide technical guidance to industries and develop alternative materials and products; and
- establish the basis for appropriate risk management measures of endocrine disruptors in Japan.

The activities and projects of the major three ministries (METI, MHLW, and MoE) are explained in the following paragraphs.

ACTIVITIES AND PROJECTS OF THE MINISTRY OF ECONOMY, TRADE, AND INDUSTRY

The METI has been developing the 3-D QSAR system since fiscal year (FY) 2000. With the input of in vitro test data for approximately 1000 chemical's, a prototype QSAR system will be established early in 2003. Both in vitro and in vivo screening methods have also been developed and conducted for certain numbers of chemicals. The METI has conducted some in vivo definitive tests, and development activities for improved definitive testing methods have been started recently. The METI also has a project to collect and analyze information and data concerning endocrine disruptors as a basic tool.

The METI has been developing the 3-D QSAR system since FY 2000 and expects that the prototype system will be established early in 2003. The whole development activity is planned to be finalized by the end of FY 2004 (the end of March 2005). In addition, in vitro test data for 500 chemicals will be collected and used to improve the prototype system during the following two years. The QSAR system will be used to prescreen thousands of industrial chemicals for additional in vivo and in vitro screening assays, as well as definitive testing.

Concerning the development of in vitro screening assays, several projects are ongoing. The reporter gene assay using the "high-throughput prescreening (HTPS)" system and the receptor binding assays have been developed for four to five years. As a new project of in vitro assays, the METI has recently started to develop a thyroid hormone effects assay and a receptor nonmediated endocrine-disrupting assay.

The METI is also developing in vivo screening methods such as uterotrophic assay, Hershberger assay, and a repeated dose 28-day oral toxicity study. Data collected while developing these screening methods are also used to improve the above-mentioned 3-D QSAR system.

Concerning the in vivo definitive testing, the METI has conducted two-generation reproduction toxicity testing. Seven chemicals have been tested, and results are open to the public. As a new project, the METI has recently started to develop in utero and through-lactational exposure tests as the improved in vivo definitive test methods.

To support those activities or projects, the METI has been collecting information including scientific data relevant to endocrine disruptors, such as testing and evaluation methods, hazard and exposure assessment data, and information on risk assessment activities throughout the world. Based on the data collected through this project and data taken while developing relevant test methods, the METI has so far issued hazard assessment reports for 15 chemicals.

The METI has one other planned new project. Under the new project, industrial chemicals with the production or import volume of more than 100 tons per year (approximately 2500 chemicals) will be screened to assess their endocrine-disrupting activity. For this screening purpose, a provisional testing and assessment scheme will be set up according to the outcome of the METI's technical development projects described so far. During FY 2003 to 2004, approximately 1000 chemicals are planned to be screened under the scheme, and obtained results will be used to further improve relevant test methods including the QSAR system.

ACTIVITIES AND PROJECTS OF THE MINISTRY OF HEALTH, LABOR, AND WELFARE

The activities of the MHLW are, in general, based on the recommendations by the Study Group on Health Effects of Endocrine-Disrupting Chemicals. The mission of the study group is to comprehensively review the latest findings on endocrine-disrupting chemicals in light of human health, and to recommend further actions.

Their activities and projects are categorized into the following seven fields:

- identify target chemical substances through the HTPS system;
- perform studies on the Organization for Economic Cooperation and Development (OECD) screening methods;
- develop full testing methods to identify/confirm endocrine disruptors;
- establish methods for sampling;
- clarify the inverted U effect (low-dose effect);
- collect and analyze exposure and epidemiological data; and
- promote risk communication.

Under these seven fields of recommendations, the ministry has set 18 action items for further activities. Some of them have been finalized, but most of them are on-going projects with plans to be finalized by FY 2005.

ACTIVITIES AND PROJECTS OF THE MINISTRY OF ENVIRONMENT

The activities of the MoE are based on the report, "SPEED '98, Strategic Programs on Environmental Endocrine Disruptors", which was published in 1998. Following the report, the ministry has been conducting the following activities:

- environmental monitoring and investigation of effects on wildlife;
- research and development of testing methods;
- environmental risk assessment/management; and
- sharing information and establishing an international network.

The MoE identified 65 chemical substances as "suspected chemicals" in the "SPEED '98" report, and have been testing and assessing these chemical substances. They have assessed the environmental risk of the "suspected chemicals", including 12 chemicals in FY 2000, 8 chemicals in FY 2001, and another 8 chemicals in FY 2002.

CONCLUSION

Further information can be obtained from the following URLs:

METI: <www.meti.go.jp/english/report/data/g020205ae.html>

MHLW: <www.nihs.go.jp/hse/endocrine-e/index.html>

MoE: <www.env.go.jp/en/topic/edcs.html>

Activities and projects related to endocrine disruptors are in the beginning stage in Japan. Consequently, measures for risk management of endocrine disruptors have not been developed or established. On the other hand, dialogues between governments and Japanese industries have been held to exchange information as well as views and opinions. As a result, with the view of social responsibility, Japanese companies have voluntarily developed and started risk management programs for some suspected chemical substances such as nonylphenol and bisphenol A. This kind of voluntary risk management activity with the cooperation from industries is believed to be one of the most efficient options under the current situation.